

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WLW/P40313ANS.WO	FOR FURTHER ACTION		See Form PCT/IPEA/416	
International application No. PCT/GB2005/000187	International filing date (day/month/year) 20.01.2005	Priority date (day/month/year) 20.01.2004		
International Patent Classification (IPC) or national classification and IPC INV. A01B45/04				
Applicant WARKE, WILLIAM LYLE				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 5 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report, and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 21.11.2005	Date of completion of this report 06.06.2006			
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Schlichting, N Telephone No. +49 89 2399-2428			
				

**INTERNATIONAL PRELIMINARY REPORT
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International application No.
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Box No. I Basis of the report

1. With regard to the **language**, this report is based on
 - the international application in the language in which it was filed
 - a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3(a) and 23.1(b))
 - publication of the international application (under Rule 12.4(a))
 - international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-16 as originally filed

Claims, Numbers

1-32 filed with telefax on 21.11.2005

Drawings, Sheets

1/32-32/32 as originally filed

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. IV Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has, within the applicable time limit:
 - restricted the claims.
 - paid additional fees.
 - paid additional fees under protest and, where applicable, the protest fee.
 - paid additional fees under protest but the applicable protest fee was not paid.
 - neither restricted the claims nor paid additional fees.
2. This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
 - complied with.
 - not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
 - all parts.
 - the parts relating to claims Nos. .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	16-19
	No: Claims	1-15,20-32
Inventive step (IS)	Yes: Claims	
	No: Claims	1-32
Industrial applicability (IA)	Yes: Claims	1-32
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

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Re Item IV

1. This Authority considers that there are 2 inventions covered by the claims indicated as follows:
 - I: Claims 1 to 25 directed to an apparatus for cutting turf, for soil de-compacting and for soil drainage comprising a tool which leading portion of said tool is disposed substantially vertically below an axis of rotation of at least one axle of the ground engaging means
 - II: Claims 26 to 31 directed to an apparatus for soil drainage and irrigation comprising a trench generating means
2. The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

Examining the possible correspondence by technical effect, one finds that the technical effect as well as the objective problem of the first invention is that the sods of turf cut will have a consistent thickness or pipes laid will be at a regular depth below surface and that the technical effect and the corresponding objective problem of the second invention is to generate a trench in the soil.

This appears to show lack of corresponding technical effect. Consequently, neither the objective problem underlying the subjects of the claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.

3. In conclusion, the groups of claims are not linked by common or corresponding special technical features and define 2 different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

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Re Item V

1. Reference is made to the following documents:

- D1: GB-A-2 379 150
- D2: US-A-5 690 178
- D3: US-A-5 009 270
- D4: US-A-2 942 674

2. Claims 1 to 25

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document) an apparatus for cutting turf, for soil de-compacting and for soil drainage and irrigation (p. 1, l. 4-7), the apparatus comprising a chassis (10) having ground engaging means (74, 76), an adjustable working arm (18, 20) having a chassis-engaging end movably mounted on the chassis (p. 5, l. 3-4) and a tool-engaging end having means for receiving a tool (p. 5, l. 4-5), means for oscillating the tool-engaging end of the adjustable working arm (p. 5, l. 6-9) wherein the oscillating means comprises a drive means mounted on the chassis and a connecting means mounted intermediate the drive means and the adjustable working arm (p. 5, l. 6-9).

D1 further describes at least one axle (see figures 2A and 4) of the ground engaging means having wheel means (74, 76) mounted thereon. The apparatus of D1 also comprises a leading portion of a tool (see figure 2A) mounted on the tool receiving means (p. 5, l. 4-5) which is disposed substantially vertically below an axis of rotation of the axle (axle of wheel 76, see figure 2A).

The subject-matter of claim 1 therefore is not new (Article 33(2) PCT).

Also D2 describes a similar apparatus with the same features and therefore, the subject-matter of claim 1 is also not new over D2.

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2.2 The dependent claims 2 to 25 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1 and D4 and the corresponding passages cited in the search report.

3. Claims 26 to 31

3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 26 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document) an apparatus for cutting turf, for soil de-compacting and for soil drainage and irrigation (p. 1, l. 4-7), the apparatus comprising a chassis (10) having ground engaging means (74, 76), an adjustable working arm (18, 20) having a chassis-engaging end movably mounted on the chassis (p. 5, l. 3-4) and a tool-engaging end having means for receiving a tool (p. 5, l. 4-5), means for oscillating the tool-engaging end of the adjustable working arm (p. 5, l. 6-9) wherein the oscillating means comprises a drive means mounted on the chassis and a connecting means mounted intermediate the drive means and the adjustable working arm (p. 5, l. 6-9).

Furthermore, D1 also shows a trench generating means (p. 9, l. 23-24), mounted on the tool receiving means of the adjustable working arm (see figure 10), said trench generating means comprising a wedge blade (12') having a leading edge blade (see figures 9 and 10) and a trailing edge having means for receiving material (as mentioned on p. 10, l. 1-3: ... designed to cut a deep narrow trench, **when the earth is removed...**, this necessarily needs means for receiving the material which cut by the leading edge blade).

The subject-matter of claim 26 therefore is not new (Article 33(2) PCT).

3.2 Dependent claims 27 to 31 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1 and D4 and the corresponding passages cited in the search report.

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4. The requirements of Article 33(4) PCT concerning industrial applicability are fulfilled by claims 1 to 31.

Re Item VII

1. Independent claim 1 and 26 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
2. Claim 32 contains a reference to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.
3. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 is not mentioned in the description, nor is this document identified therein.

CLAIMS

1. An apparatus (301, 314, 351) for cutting turf, for soil de-compacting and for soil drainage and irrigation, the apparatus (301, 314, 351) comprising a chassis (1) have ground engaging means (5, 61), an adjustable working arm (3) having a chassis-engaging end (302) movably mounted on the chassis (1) and a tool-engaging end (303) having means for receiving a tool, means for oscillating the tool-engaging end (303) of the adjustable working arm (3) wherein the oscillating means comprises a drive means mounted on the chassis (1) and a connecting means mounted intermediate the drive means and the adjustable working arm (3), wherein the ground engaging means comprises at least one axle having wheel means mounted thereon, whereby in use a leading portion of a tool on the tool receiving means is disposed substantially vertically below an axis of rotation of the axle.
2. An apparatus (301, 314, 351) as claimed in claim 1, wherein the connecting means is a single connecting rod (2).
3. An apparatus (301, 314, 351) as claimed in claim 1 or claim 2, wherein the drive means is a camshaft (11).
4. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein the chassis-engaging end (302) of the adjustable working arm (3) is pivotally mounted on a housing (27) which is movably mounted on the chassis (1).
5. An apparatus (301, 314, 351) as claimed in claim 4, wherein the housing (27) is a depth-set housing which is movable along a substantially vertical axis for adjusting the depth of a tool relative to the surface of the ground.
6. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein the ground engaging means comprises at least one axle (8) carrying wheel means thereon, the apparatus (301, 314, 351) being pivotable about the axle (8) to allow the tool to be raised clear of the ground when out of use.

7. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein the ground engaging means comprises a pair of axles (8, 14), an aft axle (14) adjacent the tool engaging end of the adjustable working arm (3) and a forward axle (8) and at least one axle carrying wheel means thereon.

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8. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein the tool is a turf cutting knife (305) comprising a turf undercutting blade (10).

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9. An apparatus (301, 314, 351) as claimed in claim 8, wherein the turf undercutting blade (10) is disposed substantially vertically below an axis of rotation of the axle (8, 14).

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10. An apparatus (301, 314, 351) as claimed in claim 8 or claim 9, wherein the turf undercutting blade (10) is reinforced.

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11. An apparatus (301, 314, 351) as claimed in any one of the claims 8 to 10, wherein the turf cutting knife (305) comprises a turf undercutting blade (10) and a turf side-cutting blade (9) extending upward and rearward from each lateral edge of the turf undercutting blade (10), the side cutting blades (9) having mounting means on their free ends for mounting the turf cutting knife (305) onto the tool receiving means of the adjustable working arm (3).

25

12. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein the tool receiving means comprises a crossbar (4) mounted on the tool-engaging end of the adjustable working arm (3).

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13. An apparatus (301, 314, 351) as claimed in claim 12 when dependent on claim 11, wherein the mounting means of the turf cutting knife (305) comprise brackets (13, 13a) extending from the side cutting blades (9) and the brackets (13, 13a) have means for releasably fastening the turf cutting knife (305) to the crossbar (4).

14. An apparatus (301, 314, 351) as claimed in claim 13, wherein a range of turf cutting knives (305) are provided with brackets (13, 13a) of different lengths to accommodate blades (10) and/or wheels (5) of different widths.

15. An apparatus (301, 314, 351) as claimed in claim 11 to 14, wherein the side cutting blades (9) are disposed laterally along the outside of the ground engaging means.

16. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein a guillotine is mounted on the aft portion of the chassis (1) of the turf cutting apparatus and is operable between an out of use position where a cutting head (101) of the guillotine is clear of the ground and an in use position where the cutting head (101) slices vertically down into a strip of cut turf to produce strips of turf of a predetermined length.

10 17. An apparatus (301, 314, 351) as claimed in claim 16, wherein the guillotine is operated between its two positions by guillotine drive means taken off the main turf cutting apparatus drive means.

15 18. An apparatus (301, 314, 351) as claimed in claim 16 or claim 17, wherein the guillotine has a measuring means (103, 108, 114) in operable engagement with a clutch means such that when a predetermined distance has been measured by the measuring means, the clutch means couples the guillotine cutting head (101) to the guillotine drive means to operate the guillotine between the out of use position and the in use position and back to the out of use position effecting a chopping action by the guillotine cutting head (101).

20 19. An apparatus (301, 314, 351) as claimed in claim 18, wherein the measuring means is a wheel having wheel diameter adjustment means.

25 20. An apparatus (301, 314, 351) as claimed in any one of claims 1 to 7, 12 or 16 to 19, wherein a trench generating means (341) is mounted on the tool receiving means of the adjustable working arm (3) wherein the trench generating means comprises a wedge blade (341) having a leading edge blade (201) and a trailing edge having means for receiving material.

30 21. An apparatus (301, 314, 351) as claimed in any one of the preceding claims, wherein pipe dispensing means (211, 209, 212, 213) are mounted on the chassis (1) of the apparatus.

22. An apparatus (301, 314, 351) as claimed in claim 20 and claim 21, wherein the pipe dispensing means (211, 209, 212, 213) and the trench generating means are mounted on the

apparatus for dispensing pipe (210) into the material receiving means of the trench generating means for drainage and/or irrigation.

23. An apparatus (301, 314, 351) as claimed in claim 22, wherein guide means (359) is mounted on the chassis (1) of the apparatus for guiding the pipe (210) from the pipe dispensing means into the trench via the material receiving means.

5 24. An apparatus (301, 314, 351) as claimed in any one of claims 20 to 23, wherein a material hopper (229) is mounted on the chassis and a material delivery means (230) is connected intermediate the hopper and the material receiving means of the trench generating means.

10 25. An apparatus (301, 314, 351) as claimed in any one of claims 20 to 24, wherein soil compacting means (220) are mounted on the adjustable working arm (3) to follow above the trench generating means (341) for flattening any uneven ground surface.

15 26. An apparatus (301, 314, 351) for soil drainage and irrigation, the apparatus (301, 314, 351) comprising a chassis (1) have ground engaging means (5, 61), an adjustable working arm (3) having a chassis-engaging end (302) movably mounted on the chassis (1) and a tool-engaging end (303) having means for receiving a tool, means for oscillating the tool-engaging end (303) of the adjustable working arm (3) wherein the oscillating means comprises a drive means mounted on the chassis (1) and a connecting means mounted intermediate the drive means and the adjustable working arm (3) wherein a trench generating means (341) is mounted on the tool receiving means of the adjustable working arm (3) wherein the trench generating means comprises a wedge blade (341) having a leading edge blade (201) and a trailing edge having means for receiving material.

20 27. An apparatus (301, 314, 351) as claimed in claim 26, wherein pipe dispensing means (211, 209, 212, 213) are mounted on the chassis (1) of the apparatus.

25 28. An apparatus (301, 314, 351) as claimed in claim 26 and claim 27, wherein the pipe dispensing means (211, 209, 212, 213) and the trench generating means are mounted on the apparatus for dispensing pipe (210) into the material receiving means of the trench generating means for drainage and/or irrigation.

29. An apparatus (301, 314, 351) as claimed in claim 28, wherein guide means (359) is mounted on the chassis (1) of the apparatus for guiding the pipe (210) from the pipe dispensing means into the trench via the material receiving means.

30. An apparatus (301, 314, 351) as claimed in any one of claims 26 or 29, wherein a material hopper (229) is mounted on the chassis and a material delivery means (230) is connected intermediate the hopper and the material receiving means of the trench generating means.

31. An apparatus (301, 314, 351) as claimed in any one of claims 26 to 30, wherein soil compacting means (220) are mounted on the adjustable working arm (3) to follow above the trench generating means (341) for flattening any uneven ground surface.

32. An apparatus substantially as hereinbefore described with reference to and as shown in the accompanying drawings.